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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/944,137	09/04/2001	Nobuyuki Matsumoto	35.C15739	1747

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EXAMINER

NGUYEN, LAM S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 01/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/944,137

Applicant(s)

MATSUMOTO ET AL.

Examiner

LAM S NGUYEN

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---The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 November 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 1-7 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The amended claims 1 and 5-7 contain new limitation “when a judgment is made that the ink is present in said flow path and the ink is not normally supplied” which was not described in the specification. Through the telephone, the applicant pointed out that the section from page 20 to 27 in the specification explains this limitation. However, after carefully reviewing this section, the examiner could not find any description about making such judgment. As a result, the new added limitation is considered as a new subject matter.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imanaka et al. (EP 0920999) in view of Imanaka et al. (US 5992984).

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Imanaka discloses a liquid discharge apparatus comprising:

- a discharge port for discharging liquid (FIG. 1, element 5);

- a liquid flow path (FIG. 1, element 7) communicating with said discharge port having a bubble generating region for generating a bubble (FIG. 1: the region is above element 2);

- a discharge energy generating element (FIG. 1, element 2) for generating thermal energy for generating the bubble in the liquid inside said bubble generating region; and

- a liquid discharge head (FIG. 1, element 6) facing said discharge energy generating element spaced apart from said discharge energy generating element having a movable member in which an end portion at an upstream side in the flow direction of the liquid inside said liquid flow path is fixed and a downstream end thereof is a free end, in which ink is discharged from said liquid discharge head and a recording is performed by adhering said liquid on a medium to be recorded, wherein said liquid discharge apparatus comprises:

- means for detecting an ink supply state inside said liquid flow path (column 4, line 12-19: a detected temperature indicating the presence or absence of the ink); and

- means for controlling or stopping the driving to said discharge energy generating element when a judgment is made that the ink is not normally supplied based on the detection result of the ink supply state inside said liquid flow path (column 4, line 12-19: based on a detected temperature detected indicating the presence or absence of the ink, the driving of the heat generating resistor can be limited or stopped).

**Referring to claim 2:** wherein said means for detecting said ink supply state is temperature detection means for detecting a temperature rise per unit hour inside the liquid flow

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path ((column 4, line 12-19: a detected temperature indicating the presence or absence of the ink).

**Referring to claim 3:** further comprising driving signal supply means (Fig. 4) for supplying a driving signal for allowing the liquid to eject from said liquid discharge head.

**Referring to claim 4:** further comprising a conveyance means for conveying the medium to be recorded which receives the liquid discharged from said liquid discharge head (FIG. 17, element 161).

Imanaka et al. (EP 0920999) do not disclose that the judgment is made that the ink is present in said flow path and the ink is not normally supplied based on the detection result of the ink supply state inside said liquid flow path.

However, Imanaka et al. (US 5992984) disclose that the judgment is made that the ink is present in said flow path and the ink is not normally supplied based on the detection result of the ink supply state inside said liquid flow path (column 41, line 30-40: the lack of discharge of the recording ink means that the ink is present and is not normally supplied).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to replace the detecting of presence or absence of ink in the flow path as disclosed by Imanaka et al. (EP 0920999) by the detecting the state of ink supplied present in the flow path as disclosed by Imanaka et al. (US 5992984). The motivation of doing so is to provide a liquid discharge head capable of detecting whether a bubble is present in the vicinity of the heat generating member in each of the plural liquid paths for the purpose of effecting stable liquid discharge as taught by Imanaka et al. (US 5992984) (column 5, line 37-42).

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3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imanaka (EP 0920999) in view of Imanaka et al. (US 5992984) and further in view of Okada et al. (US 5886713).

Imanaka (EP 0920999) and Imanaka et al. (US 5992984) disclose the claimed invention as discussed above except wherein said temperature rise is more than a predetermined threshold value, a judgment is made that the ink is not in a state of being normally supplied and the driving to said heat generating element is controlled or stopped.

Okada et al. discloses that wherein said temperature rise is more than a predetermined threshold value, a judgment is made (FIG. 8) that the ink is not in a state of being normally supplied (column 5, line 10-14) and the driving to said heat generating element is controlled or stopped (FIG. 8).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to include a condition for terminating printing operation when the detected temperature indicating the state of the ink supply is greater than a threshold value as disclosed by Okada et al. into the liquid ejecting head disclosed by Imanaka (EP 0920999) in view of Imanaka et al. (US 5992984). The reason of doing so is that it is possible to control printing so as to prevent the ink discharge failure without affecting speed of the printing operation of the printing apparatus as taught by Okada et al. (column 6, line 30-37).

#### ***Response to Arguments***

Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

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**Regarding to the argument on page 6-8 referring to claims 1, 5-7:** The applicants argued that the cited references fail to disclose the judgment is made that the ink is present in said flow path and the ink is not normally supplied based on the detection result of the ink supply state inside said liquid flow path. However, as discussed above, the combination of Imanaka et al. (EP 0920999) and Imanaka et al. (US 5992984) references disclose the above limitation. Therefore, these claims are unpatentable. In addition, claims 2-4 are also rejected under the teaching of Imanaka et al. (EP 0920999) in view of Imanaka et al. (US 5992984). Therefore, these claims are also unpatentable.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (703)305-3342.

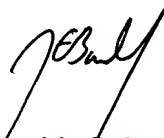
The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN E BARLOW can be reached on (703)308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

LN

January 22, 2003

  
John Barlow  
Supervisory Patent Examiner  
Technology Center 2800